$$e_{y\times 100+(x/20)\times 100}=e_{100y+5x}=e_{100y}+\frac{x}{20}\frac{\Delta e}{1\,!}100y+\frac{x}{20}\left(\frac{x}{20}-1\right)\frac{\Delta^2 e}{2\,!}100y$$

$$+\frac{x}{20}\left(\frac{x}{20}-1\right)\left(\frac{x}{20}-2\right)\frac{\Delta^3 e_{100y}}{2\,!},$$

where $y=0, 1, 2, 3, 4$.

$x=1, 2, \ldots .19$. As the complete solution, and giving the 95 values sought.

Example: It is required to find e_{425}. Here $y=4$, $x=5$, and $e_{400}=40$, $\Delta e_{400}=8.5$, $\Delta^2 e_{400}=2.5$, $\Delta^3 e_{400}=0.5$, $\Delta^4 e_{400}=0$. Hence

$$e_{425}=40+\frac{1}{4}\,8.5+\frac{1}{4}\left(\frac{1}{4}-1\right)\frac{2.5}{2\,!}+\frac{1}{4}\left(\frac{1}{4}-1\right)\left(\frac{1}{4}-2\right)\frac{0.5}{3\,!}$$

$$=40+2.125-0.234+0.027=41.918.$$

Remark: With a table like this satisfactory results in hunting may be obtained. The table is contained in a small note book. But the style of hunting must be changed. Longer distances must be used, and the work resolves itself into judging distances, and variations in the wind, setting elevation and wind guage sights, accurate sighting and firm arm holding of the rifle.

Also solved by *G. B. M. ZERR.*

PROBLEMS FOR SOLUTION.

ARITHMETIC.

144. Proposed by B. F. FINKEL, A. M., M. Sc., Professor of Mathematics and Physics in Drury College, Springfield, Mo.

A hired a house for one year for $300; at the end of four months he takes in M as a partner; and at the end of eight months he takes in P. At the end of the year what rent must each pay? [From Greenleaf's *National Arithmetic*, page 442.]

145. Proposed by B. F. FINKEL, A. M., M. Sc., Professor of Mathematics and Physics in Drury College, Springfield, Mo.

By discounting a note at 20% per annum, I get 22½% per annum interest; how long does the note run? [From Ray's *Higher Arithmetic*, page 405.]

*** Solutions of these problems should be sent to B. F. Finkel not later than July 10.

ALGEBRA.

136. Proposed by JOHN M. COLAW, A. M., Monterey, Va.

Solve $a^{x^2}b^{y^2}=c$.....(1), and $c^{x+y}=ab$.....(2).

137. Proposed by MARCUS BAKER, U. S. Geological Survey, Washington, D. C.

Solve, if possible, $a^x+b^x=c$.

138. Proposed by HARRY S. VANDIVER, Bala, Pa.

Show that the number of solutions in positive integers for x, y, and z of $x^3+2y^3+4z^3-6xyz=1$ is infinite.

*** Solutions of these problems should be sent to J. M. Colaw not later than July 10.

GEOMETRY.

166. Proposed by S. F. NORRIS, Professor of Astronomy and Mathematics, Baltimore City College, Baltimore, Md.

Two cities are 200 miles apart. To what height must a man ascend from one city in order that he may see the other, supposing the circumference of the earth to bo 25,000 miles? [From Wentworth's *New Plane and Solid Geometry*, page 381, No. 619.] Required solution by Geometry.

167. Proposed by JOHN J. QUINN, Professor of Mathematics, High School, Warren, Pa.

If at the vertex of an isosceles triangle one of whose basal vertices is pivoted and the other free to move in a straight line. a rhombus be pivoted with sides parallel to the sides of the triangle, the locus of every point on the rhombus except the one which is its intersection with the fixed side of the triangle is an ellipse.

168. Proposed by MISS GUBELMAN, Student Southern Illinois State University, Carbondale, Ill.

To draw a perpendicular to one side of a triangle dividing it into two equivalent parts.

*** Solutions of these problems should be sent to B. F. Finkel not later than July 10.

CALCULUS.

130. Proposed by J. SCHEFFER, A. M., Hagerstown, Md.

Solve the differential equation $x^x(\frac{dy}{dx}+y\log x)-a=0$.

131. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy, Irving College Mechanicsburg, Pa.

Integrate $2/x$, with regard to $d[\sqrt{(1-x^2)}]$.

132. Proposed by JOHN M. COLAW, A. M., Monterey, Va.

What expression derived from the *polar* equation of a curve is equivalent to the expression for dy/dx derived from the *Cartesian* equation of the same curve? Prove work with $\rho=2r\cos\theta$.

*** Solutions of these problems should be sent to J. M. Colaw not later than July 10.

MECHANICS.

122. Proposed by B. F. FINKEL, A. M., M. Sc., Professor of Mathematics and Physics, Drury College, Springfield, Mo.

Prove that a pressure P applied uniformly to a solid in all directions will reduce its dimensions along three perpendicular axes in ratio $1:1+p-2q$, p being the elongation along one face and q the contraction along the other. [Barker's *Physics*.]